

CLAIMS

What is claimed is:

1. A valve for use in aircraft, the valve comprising:
 - a body;
 - a selective interrupter positioned inside the body for rotation therein;
 - a flow arrangement between the selective interrupter and the body;
 - a bonnet connected to the body and in contact with the selective interrupter;
 - an arm extending through the bonnet and connected to the selective interrupter;and
 - an actuator movably connected to the arm.
2. The valve of claim 1, wherein the valve is adapted to be installed into an aircraft instrument panel.
3. The valve of claim 1, wherein the valve comprises a lightweight material.
4. The valve of claim 1, wherein the valve comprises a fire resistant material.
5. The valve of claim 1, wherein the valve comprises an aircraft quality material.
6. The valve of claim 1, wherein the valve comprises a temperature-stable material such that the valve functions within the temperature range of -20°F to 212°F.
7. The valve of claim 1, wherein the valve further comprises a tolerance between the selective interrupter and the body sufficient to prevent air leakage therebetween without using a lubricant.
8. The valve of claim 1, wherein the valve further comprises a lubricant between the selective interrupter and the body.

9. The valve of claim 1, wherein the selective interrupter comprises an exterior wall, an interior, a first end, a second end, and at least three apertures.

10. The valve of claim 9, wherein the at least three apertures comprise at least a first aperture of the at least three apertures in contact with a driver source, a second aperture of the at least three apertures in contact with an instrument, and a third aperture of the at least three apertures in contact with a dummy load.

11. The valve of claim 10, wherein the at least three apertures comprise a horizontally staggered arrangement of the second aperture of the at least three apertures and the third aperture of the at least three apertures along the exterior wall, and the second end comprising the first aperture of the at least three apertures.

12. The valve of claim 11, wherein the horizontally staggered arrangement further comprises a vertical separation between the second aperture of the at least three apertures and the third aperture of at least three apertures wherein the second aperture and the third aperture are vertically positioned to prevent horizontal overlap in the horizontally staggered arrangement.

13. The valve of claim 9, wherein the at least three apertures comprise a horizontally staggered arrangement of a first set of two apertures of the at least three apertures and a second set of two apertures of the at least three apertures on the exterior wall,

wherein the first set comprises one aperture of at least a first aperture of the at least three apertures and a second aperture of the at least three apertures and,

wherein the second set comprises another of at least a first aperture of the at least three apertures and a third aperture of the at least three apertures.

14. The valve of claim 9, wherein the selective interrupter further comprises at least one routed portion in contact with at least one of the at least three apertures to form a depression in the exterior wall.

15. The valve of claim 9, wherein the body comprises an outer wall, an inner wall, a primary end, a secondary end, and at least three body apertures.

16. The valve of claim 15, wherein the at least three body apertures comprise substantially cylindrical body apertures, substantially oval slot-shaped body apertures, threaded body apertures, or a combination thereof.

17. The valve of claim 15, wherein the at least three body apertures comprise at least a first body aperture of the at least three body apertures in contact with a driver source, a second body aperture of the at least three body apertures in contact with an instrument, and a third body aperture of the at least three body apertures in contact with a dummy load.

18. The valve of claim 17, wherein the at least three apertures and the at least three body apertures are positioned for the flow arrangement comprising a complete alignment of:

the at least the first aperture of the at least three apertures with the at least the first body aperture of the at least three body apertures, and

the second aperture of the at least three body apertures with the second body aperture of the at least three body apertures,

wherein the third aperture of the at least three apertures and the third body aperture of the at least three body apertures are completely misaligned.

19. The valve of claim 17, wherein the at least three apertures and the at least three body apertures are positioned for the flow arrangement comprising a complete alignment of:

the at least the first aperture of the at least three apertures with the at least the first body aperture of the at least three body apertures, and

the third aperture of the at least three body apertures with the third body aperture of the at least three body apertures,

wherein the second aperture of the at least three apertures and the second body aperture of the at least three body apertures are completely misaligned.

20. The valve of claim 17, wherein the at least three apertures and the at least three body apertures are positioned for the flow arrangement comprising a partial alignment of:
- the at least the first aperture of the at least three apertures with the at least the first body aperture of the at least three body apertures,
 - the second aperture of the at least three apertures with the second body aperture of the at least three body apertures, and
 - the third aperture of the at least three apertures with the third body aperture of the at least three body apertures.
21. The valve of claim 15, wherein the at least three body apertures comprise:
- a horizontally staggered arrangement of a second body aperture and a third body aperture of the at least three body apertures on the outer wall, and
 - the secondary end comprising a first body aperture of the at least three body apertures,
 - wherein the at least three body apertures are positioned such that a vertical plane bisects the at least three body apertures.
22. The valve of claim 15, wherein the outer wall comprises a raised block with a second body aperture and a third body aperture of the at least three body apertures embedded therein, wherein the raised block is integrally connected to the outer wall.
23. The valve of claim 15, wherein the at least three body apertures comprise a horizontally staggered arrangement of the at least three body apertures on the outer wall, wherein the at least three body apertures are positioned such that a vertical plane bisects the at least three body apertures.
24. The valve of claim 15, wherein the primary end comprises an open end.
25. The valve of claim 15, wherein the secondary end comprises a closed end.

26. The valve of claim 9, wherein the interior of the selective interrupter comprises a hollow cavity open at the second end.
27. The valve of claim 9, wherein the interior of the selective interrupter comprises at least two separated channels.
28. The valve of claim 27, wherein the at least two separated channels comprise a first separated channel and a second separated channel,
wherein the at least two separated channels are positioned between the first end and the second end, and
wherein the at least two separated channels are positioned such that rotary movement of the selective interrupter gradually permits a flow relationship to iteratively transition from solely within the first separated channel to solely within the second separated channel.
29. The valve of claim 9, wherein the first end comprises a closed end.
30. The valve of claim 9, wherein the second end comprises an at least partially opened end.
31. The valve of claim 1, wherein the actuator further comprises a handle.
32. The valve of claim 1, wherein the arm further comprises gearing.
33. The valve of claim 32, wherein the actuator further comprises a geared drive shaft in mesh with the gearing.
34. The valve of claim 1, wherein the actuator further comprises a motor connected to a drive shaft.
35. The valve of claim 1, wherein the actuator further comprises a solenoid.

36. The valve of claim 1, wherein the actuator further comprises an arm hole positioned to at least partially receive the arm.
37. The valve of claim 1, wherein the arm further comprises an arm connection hole.
38. The valve of claim 1, wherein the actuator further comprises an actuator connection hole.
39. The valve of claim 1, wherein the valve further comprises a connecting cylinder for connecting the actuator to the arm.
40. The valve of claim 39, wherein the connecting cylinder is threadedly connected to a nut.
41. The valve of claim 1, wherein the bonnet further comprises a plurality of mounting holes positioned for connecting the bonnet to the body.
42. The valve of claim 1, wherein the body further comprises a plurality of receptacle cylinder holes positioned for connecting the body to the bonnet.
43. The valve of claim 1, wherein the valve further comprises a plurality of mounting cylinders positioned to connect the bonnet to the body.
44. The valve of claim 43, wherein the plurality of mounting cylinders are connected to the body and the bonnet.
45. The valve of claim 1, wherein the bonnet further comprises a stop, wherein the stop limits a rotary movement of the selective interrupter.
46. The valve of claim 1, wherein the valve further comprises a friction member located between the bonnet and the body.
47. The valve of claim 1, wherein the actuator further comprises a pressure pin.

48. The valve of claim 47, wherein the bonnet further comprises at least two pressure pinholes for sliding the pressure pin into a locked position therein.
49. The valve of claim 1, wherein the actuator further comprises a software program to control rotation of the selective interrupter.
50. The valve of claim 1, wherein the body further comprises a lip.
51. The valve of claim 50, wherein the lip further comprises a plurality of installation holes positioned for installing the valve into an aircraft instrument panel.
52. The valve of claim 51, wherein the valve further comprises a plurality of installation cylinders that fit within the plurality of installation holes to connect the valve to the aircraft instrument panel.
53. The valve of claim 1, wherein the valve is formed of aircraft grade aluminum.
54. The valve of claim 1, wherein the valve is substantially cylindrical shape.
55. The valve of claim 5, wherein the valve is formed of a metal, a non-metal, a metalloid or an alloy.
56. The valve of claim 9, wherein the at least three apertures comprise substantially conical apertures, oval slot-shaped apertures, beveled apertures, or a combination thereof.
57. The valve of claim 14, wherein the routed portion is graduated.
58. The valve of claim 14, wherein the routed portion is a routed band that encircles the exterior wall of the selective interrupter.

59. The valve of claim 14, wherein the routed portion comprises a first routed portion appurtenant to a second aperture of the at least three apertures and a second routed portion appurtenant to a third aperture of the at least three apertures.
60. The valve of 27, wherein the at least two separated channels comprise substantially cylindrical channels, substantially conical channels, threaded channels, or a combination thereof.
61. The valve of claim 32, wherein the gearing comprises keyed gearing or screwed gearing.
62. A valve for protecting an aircraft instrument comprising:
a body; and
a selective interrupter positioned inside the body for rotation therein;
wherein rotation of the selective interrupter disengages, without disconnecting, the instrument from a pneumatic flow source.
63. The valve of claim 62 wherein the valve comprises apertures for coupling the valve to the instrument, the pneumatic flow source, and a dummy load.
64. The valve of claim 63 wherein at least a first rotational position of the selective interrupter enables a flow relationship between the pneumatic flow source and the instrument.
65. The valve of claim 63 wherein at least a second rotational position of the selective interrupter enables a flow relationship between the pneumatic flow source and the dummy load.
66. The valve of claim 63 wherein at least a third position of the selective interrupter enables a flow relationship between the pneumatic flow source and both the instrument and the dummy load.
67. The valve of claim 62 further comprising an actuator for rotating the selective interrupter.

68. The valve of claim 62 further comprising a stop to limit rotation of the selective interrupter.

69. The valve of claim 62 further comprising a lock to maintain disengagement of the instrument from the pneumatic flow source.

70. The valve of claim 62 wherein rotation of the selective interrupter does not interrupt flow from the pneumatic flow source.

71. A valve for protecting an aircraft instrument comprising:

- a body having at least three body apertures comprising at least one non-closeable body aperture and at least two closeable body apertures; and

- a selective interrupter positioned inside the body for rotation therein;

- wherein rotation of the selective interrupter redirects, without interrupting, a pneumatic flow to the instrument.